

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BU-118Xq999	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US04/08007	International filing date (day/month/year) 16 March 2004 (16.03.2004)	Priority date (day/month/year) 17 March 2003 (17.03.2003)
International Patent Classification (IPC) or national classification and IPC IPC(7): A61N 1/00 and US Cl.: 600/013		
Applicant TRUSTEES OF BOSTON UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
 

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of      sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 14 January 2005 (14.01.2005)	Date of completion of this report 07 March 2005 (07.03.2005)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer <i>Sharon A. Greene for</i> Nikita R Veniaminov Telephone No. (703) 308-0858

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US04/08007

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed.
- ☒ the description:  
pages 1-15 \_\_\_\_\_ as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☒ the claims:  
pages 16-30 \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, as amended (together with any statement) under Article 19  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☒ the drawings:  
pages 1-14 \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages NONE \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/US04/08007

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>1-93</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-93</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>1-93</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/US04/08007

## Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

**V. 2. Citations and Explanations:**

Claims 1-93 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a magnetic stimulator for magnetically stimulating a region of a body comprising the first and second coils, wherein said coils are oriented such that the first and second magnetic fields produce a beat frequency time-varying electric field in the region of the body, the beat frequency being determined by the first and second frequencies. Further, the prior art does not teach or fairly suggest a magnetic stimulator for magnetically stimulating a region of a body comprising a second coil producing a second time-varying magnetic field at a second frequency that is different than a first frequency produced by a first coil, the first frequency being within about 50 Hz of the second frequency. Further, the prior art does not teach or fairly suggest a magnetic stimulator for magnetically stimulating a region of a body comprising a second coil producing a second time-varying magnetic field at a second frequency that is different than a first frequency produced by a first coil, each of the first and second frequencies being between about 5 KHz and about 100 KHz. Further, the prior art does not teach or fairly suggest a magnetic stimulator for magnetically stimulating a region of a body comprising the first and second coils oriented such that the first and second magnetic fields produce a beat frequency time-varying magnetic field in the region of the body, the beat frequency being between about 1 Hz and about 50 Hz and being determined by the first and second frequencies. Further, the prior art does not teach or fairly suggest a method of magnetically stimulating a region of a body comprising subjecting the region to a beat frequency electric field produced by first and second time-varying magnetic fields having respective first and second frequencies, the first frequency being different than the second frequency, the region being adjacent a brain of the body. Further, the prior art does not teach or fairly suggest a method of magnetically stimulating a region of a body comprising subjecting the region to a beat frequency electric field produced by first and second time-varying magnetic fields having respective first and second frequencies, the first frequency being within 50 Hz of the second frequency. Further, the prior art does not teach or fairly suggest a method of magnetically stimulating a region of a body comprising subjecting the region to a beat frequency electric field produced by first and second time-varying magnetic fields having respective first and second frequencies, the first and second frequencies being between about 5 KHz and about 100 KHz. Further, the prior art does not teach or fairly suggest a method of magnetically stimulating a region of a body comprising subjecting the region to a beat frequency electric field having a frequency between about 1 Hz and about 50 Hz and produced by the first and second time-varying magnetic fields having respective first and second frequencies the first frequency being different than the second frequency. Further, the prior art does not teach or fairly suggest a method of magnetically stimulating a region of a body comprising generating a first time-varying magnetic field having a first frequency along a first direction oriented toward the region of the body; and generating a second time-varying magnetic field having a second frequency along a second direction oriented toward the region of the body; wherein the first frequency being within about 50 Hz of the second frequency. Also, the prior art does not teach or fairly suggest a magnetic stimulation coil, comprising a first conductor defining a signal path to a point on the first conductor; at least one second conductor defining a signal path away from the point, the at least one second conductor being electrically connected in series with the first conductor at the point and extending from the point to a location spaced from the first conductor by a predetermined distance, at least a portion of the at least one second conductor adjacent the point being non-parallel to the first conductor; and a lead electrically connected to the second conductor.

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**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Claims 1-93 meet the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----